

Subject Description Form

Subject Code	EE2102 / EE2102A / IC2112
Subject Title	IC Training I (EE)
Credit Value	4 Training Credits
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	<ol style="list-style-type: none"> 1. To provide trainees with simulated working environments and training of industrial practices in Electrical Engineering. 2. This subject covers a wide range of fundamental electrical engineering application technology that including electrical installation practice, lighting and electrical system design, LV switchboard and power monitoring, integral building system and basic electronic practice.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. identify relevant engineering theories and principles and to apply them in hands-on training exercises to determine system feasibility; b. compare and contrast conceptual design, develop actual work sequences and methods for various electrical installations; c. recognize the engineering standards, regulations and practices to undertake the design, construction, testing and commissioning electrical distribution system in buildings. ; d. apply intelligent building control technology effectively and evaluate new building automation/intelligent control schemes; and e. apply their knowledge and skills for system analysis.
Subject Synopsis/ Indicative Syllabus	<p><u>(TM0367) Lighting and Electrical System Design</u> Interior lighting design and calculation; daylight illumination consideration; lumens and reflectors; T5, T8 and T11 lamps; energy conservation. Introduction of low-voltage power distribution system and code of practices of electrical design in Hong Kong; examine architectural drawings; design lighting and electrical services; prepare layout drawings and schematics.</p> <p><u>(TM0389) Low-voltage Switchboard and Power Monitoring, AC Control and PLC</u> Specifications, standards and requirements of LV switchboard; IDMTL and electronic protection relays; schematic diagram, testing, commissioning and maintenance. Power monitoring and analysis, noise and harmonics; active filters and real- time capacitor bank. Introduction of programmable controller systems, sensors, actuators, drives, timers, counters, ladder logic programming and testing.</p> <p><u>(TM0380) Integrated Building Systems</u> Proprietary and open systems (BMS, EIB and DALI); sensors and actuators; wiring circuit, scenes control; system design, programming and commissioning; intelligent building system integration.</p>

	<p><u>(TM0373) Electrical Installation and Basic Electronic Practice</u></p> <p>Wiring for conventional low voltage installations and intelligent building control systems (EIB and DALI); final lighting and power circuits, control gears and protective devices; inspection, testing.</p> <p>Identification of electronic circuit components, soldering and de-soldering, Dry film process, Etching process.</p>																																																																																																																																																
<p>Teaching/ Learning Methodology</p>	<p>The teaching and learning methods include lectures, workshop tutorials, and practical works to convey general principles, techniques and related technologies to students. Their learning knowledge will be strengthened through the practical exercises and case studies in a problem-based format for the development of system integration skills, and to effectively apply those on real world environments.</p>																																																																																																																																																
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1" data-bbox="432 622 1455 999"> <thead> <tr> <th>Assessment Methods</th> <th rowspan="2">% weighting</th> <th colspan="5">Intended Learning Outcomes Assessed</th> </tr> <tr> <th></th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> </tr> </thead> <tbody> <tr> <td>TM0367 Lighting and Electrical System Design</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1. Assignments</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>2. Test</td> <td>30%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Training Report</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" data-bbox="432 1039 1455 1447"> <thead> <tr> <th>Assessment Methods</th> <th rowspan="2">% weighting</th> <th colspan="5">Intended Learning Outcomes Assessed</th> </tr> <tr> <th></th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> </tr> </thead> <tbody> <tr> <td>TM0389 Low-Voltage Switchboard and Power Monitoring, AC Control and PLC</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1. Assignment</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Test</td> <td>30%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Training Report</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" data-bbox="432 1496 1455 1872"> <thead> <tr> <th>Assessment Methods</th> <th rowspan="2">% weighting</th> <th colspan="5">Intended Learning Outcomes Assessed</th> </tr> <tr> <th></th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> </tr> </thead> <tbody> <tr> <td>TM0383 Integrated Building Systems</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1. Assignment</td> <td>40%</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Test</td> <td>30%</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Training Report</td> <td>30%</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Assessment Methods	% weighting	Intended Learning Outcomes Assessed						a	b	c	d	e	TM0367 Lighting and Electrical System Design							1. Assignments	40%	✓	✓	✓		✓	2. Test	30%	✓	✓				3. Training Report	30%	✓	✓	✓		✓	Total	100%						Assessment Methods	% weighting	Intended Learning Outcomes Assessed						a	b	c	d	e	TM0389 Low-Voltage Switchboard and Power Monitoring, AC Control and PLC							1. Assignment	40%	✓	✓	✓	✓	✓	2. Test	30%	✓	✓				3. Training Report	30%	✓	✓	✓	✓	✓	Total	100%						Assessment Methods	% weighting	Intended Learning Outcomes Assessed						a	b	c	d	e	TM0383 Integrated Building Systems							1. Assignment	40%	✓			✓	✓	2. Test	30%	✓					3. Training Report	30%	✓			✓	✓	Total	100%					
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	2. Test	30%	✓	✓			
	3. Training Report	30%	✓	✓	✓		✓
	Total	100%					
	<p>The assignment is designed to facilitate students to reflect and apply the knowledge periodically throughout the training.</p> <p>Test is designed to facilitate students to review the breadth and depth of their understanding on specific topics.</p> <p>Training Report is designed to facilitate students to acquire deep understanding on the topics of the training and to present those concepts clearly.</p>						
Student Study Effort Expected	Class Contact						
	▪ Lecture / Tutorial / Demonstration						32 Hrs.
	▪ Workshop Practice						86 Hrs.
	▪ Test						2 Hrs.
	Other Study Effort						0 Hr.
	Total Study Effort						120 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Training material, manual and articles published by the Industrial Centre. 2. EMSD, Code of Practice for the Electricity (Wiring) regulations, 2020 Edition 3. IET wiring regulation, 18th Edition. 4. EMSD, Code of Practice for Energy Efficiency of Building Services Installation 2021 						